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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,812	02/18/2005	Horst Schulz	ZAHFRI P723US	1653

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EXAMINER	
MILLS, DANIEL J	

ART UNIT	PAPER NUMBER
3679	

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/524,812	SCHULZ ET AL	
	Examiner	Art Unit	
	Daniel J. Mills	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Product by Process

Claims 13 and 16 are product by process claims, determination of patentability in "product by process" claims is based on product itself, even though such claims are limited and defined by process, and thus product in such claim is unpatentable if it is same as, or obvious from, product of prior art, even if prior product was made by different process.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "first centering segment (A) and the intermediate toothed segment (B) as well as the second centering segment (C) have a same second diameter (d2) which is larger than the first diameter (d1) of the front centering segment (A)" (claim 13 lines 8-11); must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The objections to the specification are withdrawn in view of amendment submitted 2/7/2006.

Claim Objections

The objections to the Claims are withdrawn in view of amendment submitted 2/7/2006.

Claim 16 is objected to because the symbol ">=" (line 2) must be written out as --greater than or equal to--.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Regarding claim 13, the disclosed invention is inoperative and therefore lacks utility. The limitation "and the first centering segment ... of the front center segment (A);" (lines 8-11) sets forth structure that can not be assembled (assuming the applicant

is attempting to claim the apparatus in its assembled state – which is unclear) because if the first centering segment had the same second diameter as the second centering section, assembly would either be prevented, or assembly would not be possible as stated and claimed by applicant.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 13 and all dependent claims are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "to cut a counter profile in the hub" (line 21) is not supported by the original disclosure.

The limitation "and the first centering segment ... of the front center segment (A);" (lines 8-11) lacks support in the original disclosure.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 13 and all dependent claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation "to cut a counter profile in the hub and form a positive interference fit" (line 21-22) is unclear. It seems that if a counter profile were cut, no interference fit would be possible as the two components would fit together with no distortion (as is necessary in an interference fit).

It is unclear whether the limitations "when the shaft is inserted ... and first segment of the hub" (claim 13 lines 18-22) are setting forth structural limitations or improperly setting forth method steps in an apparatus claim.

It is unclear whether the applicant intends to claim the apparatus in an assembled or preassembled state.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 13-15, and 17 are rejected under 35 U.S.C. 102(a) as being anticipated by Meeker et al. (Meeker – US 6,408,669).

Regarding claim 13, Meeker discloses a shaft-hub connection comprising a shaft (100) comprising; a first centering segment (102) located at a free end of the shaft

having a first diameter a second centering segment axially spaced from the first centering segment; an intermediate toothed segment (103) located axially between the first and second centering segment, and the first centering segment and the intermediate toothed segment as well as the second centering segment have a same second diameter which is larger than the first diameter of the front centering segment; a hub (81) having a stepped aperture formed therein for receiving the shaft in an axial direction, the aperture consisting essentially of a first segment (92) having a first aperture diameter; a second segment having a second aperture diameter (75) which is larger than the first aperture diameter; and wherein the diameter of the first segment (internal diameter of the splines) is smaller than the diameter (root diameter of the splines) of the intermediate central toothed segment and when the shaft is inserted into the aperture to form the shaft-hub connection, the intermediate central toothed segment is forced into an overlapping axial engagement with the smaller diameter of the aperture to cut a counter profile in the hub and form a positive interference fit between the central toothed segment and first segment of the hub (see column 2 lines 20-31).

Regarding claim 14, Meeker discloses a shaft-hub connection wherein the first shaft diameter of the first centering segment is substantially the same diameter as the first segment diameter, and the second diameter of the second centering segment is substantially the same as the second segment diameter to form a friction fit(see column 2 lines 20-31).

Regarding claim 15, Meeker discloses a shaft-hub connection further comprising a groove segment located axially between the central toothed segment and the front

centering segment, the groove segment has a diameter smaller than the diameter of the front centering segment.

Regarding claim 17, Meeker discloses a shaft-hub connection wherein the second centering segment extends axially to a shaft collar (101) which abuts on a front face of the hub.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meeker et al. (Meeker – US 6,408,669).

Regarding claim 16, Meeker discloses a shaft-hub connection wherein the toothed segment has toothing but fails to show that the root diameter is the diameter of the groove segment or that the toothing is formed by knurling.

Adjusting the depth of the splines would have been an obvious and simple matter of engineering design choice at the time of applicant's invention. It would have been obvious to form the splines to be deeper for the purpose of increased strength.

Knurling is a very well known process for forming splines and it would have been a simple matter of engineering design choice at the time of applicant's invention, to use a knurling process to form teeth for the purpose of reducing cost. Accordingly, it would

have been obvious at the time of applicant's invention to modify the arrangement of Meeker to include knurled teeth.

Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallberg (US 1,687,019) in view of Mansel (US 4,118,134).

Regarding claim 13, Hallberg discloses a shaft-hub connection comprising a shaft (14) comprising; a first centering segment (16) located at a free end of the shaft having a first diameter, a second centering segment (C) axially spaced from the first centering segment; an intermediate toothed segment (15) located axially between the first and second centering segment, and the first centering segment and the intermediate toothed segment as well as the second centering segment have a same second diameter which is larger than the first diameter of the front centering segment; a hub (11) having a stepped aperture formed therein for receiving the shaft in an axial direction, the aperture consisting essentially of a first segment (13) having a first aperture diameter; a second segment having a second aperture diameter (12) which is larger than the first aperture diameter; and wherein the diameter of the first segment (internal diameter of the splines) is smaller than the diameter (root diameter of the splines) of the intermediate central toothed segment and when the shaft is inserted into the aperture to form the shaft-hub connection, the intermediate central toothed segment is forced into an overlapping axial engagement with the smaller diameter of the aperture. Hallberg fails to disclose that the intermediate central toothed segment is forced into an overlapping axial engagement with the smaller diameter of the aperture

cut a counter profile in the hub and form a positive interference fit between the central toothed segment and first segment of the hub.

Mansel teaches a method of placing a shaft in a hub by which a knurled toothed segment is forced into an overlapping axial engagement with a smaller diameter of an aperture to cut a counter profile in the hub and form a positive interference fit between the knurled toothed segment and first segment of the hub, for the purpose of positive fitting joint cheaply. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention, to modify the arrangement of Hallberg, to include a method of placing a shaft in a hub by which a knurled toothed segment is forced into an overlapping axial engagement with a smaller diameter of an aperture to cut a counter profile in the hub and form a positive interference fit between the knurled toothed segment and first segment of the hub, for the purpose of positive fitting joint cheaply

Regarding claim 14, Hallberg in view of Mansel results in a shaft-hub connection wherein the first shaft diameter of the first centering segment is substantially the same diameter as the first segment diameter, and the second diameter of the second centering segment is substantially the same as the second segment diameter to form a friction fit.

Regarding claim 15, Hallberg in view of Mansel results in a shaft-hub connection further comprising a groove segment located axially between the central toothed segment and the front centering segment, the groove segment has a diameter smaller than the diameter of the front centering segment.

Regarding claim 16, Hallberg in view of Mansel results in a wherein the toothed segment has knurled toothing defining a root diameter greater than or equal to the diameter the groove segment.

Regarding claim 17, Hallberg in view of Mansel results in a shaft-hub connection wherein the second centering segment extends axially to a shaft collar (14) which abuts on a front face of the hub.

Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orlowski (DE 4134552) in view of Mansel (US 4,118,134).

Regarding claim 13, Orlowski discloses a shaft-hub connection comprising a shaft comprising; a first centering segment (5) located at a free end of the shaft having a first diameter, a second centering segment (between 1 and 3) axially spaced from the first centering segment; an intermediate toothed segment (3) located axially between the first and second centering segment, and the first centering segment and the intermediate toothed segment as well as the second centering segment have a same second diameter which is larger than the first diameter of the front centering segment; a hub (6) having a stepped aperture formed therein for receiving the shaft in an axial direction, the aperture consisting essentially of a first segment (at 5) having a first aperture diameter; a second segment having a second aperture diameter (at 3) which is larger than the first aperture diameter; and wherein the diameter of the first segment (internal diameter of the splines) is smaller than the diameter (root diameter of the splines) of the intermediate central toothed segment and when the shaft is inserted into the aperture to form the shaft-hub connection, the intermediate central toothed segment

is forced into an overlapping axial engagement with the smaller diameter of the aperture. Orlowski fails to disclose that the intermediate central toothed segment is forced into an overlapping axial engagement with the smaller diameter of the aperture cut a counter profile in the hub and form a positive interference fit between the central toothed segment and first segment of the hub.

Mansel teaches a method of placing a shaft in a hub by which a knurled toothed segment is forced into an overlapping axial engagement with a smaller diameter of an aperture to cut a counter profile in the hub and form a positive interference fit between the knurled toothed segment and first segment of the hub, for the purpose of positive fitting joint cheaply. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention, to modify the arrangement of Orlowski, to include a method of placing a shaft in a hub by which a knurled toothed segment is forced into an overlapping axial engagement with a smaller diameter of an aperture to cut a counter profile in the hub and form a positive interference fit between the knurled toothed segment and first segment of the hub, for the purpose of positive fitting joint cheaply

Regarding claim 14, Orlowski in view of Mansel results in a shaft-hub connection wherein the first shaft diameter of the first centering segment is substantially the same diameter as the first segment diameter, and the second diameter of the second centering segment is substantially the same as the second segment diameter to form a friction fit.

Regarding claim 15, Orlowski in view of Mansel results in a shaft-hub connection further comprising a groove segment located axially between the central toothed segment and the front centering segment, the groove segment has a diameter smaller than the diameter of the front centering segment.

Regarding claim 16, Orlowski in view of Mansel results in a wherein the toothed segment has knurled toothing defining a root diameter greater than or equal to the diameter the groove segment.

Regarding claim 17, Orlowski in view of Mansel results in a shaft-hub connection wherein the second centering segment extends axially to a shaft collar (14) which abuts on a front face of the hub.

Response to Arguments

Applicant's arguments with respect to claims 5-12 have been considered but are moot in view of the new ground(s) of rejection.

Examiner notes that knurl-splined shafts which forced into a bore to form a interference fit with a counter profile are well known, and that wheel studs are but one of many examples.

Oct. 9, 1928. 1,687,019

A. W. HALLBERG

LAVATORY FIXTURE

Filed July 8, 1925

Fig. 1.

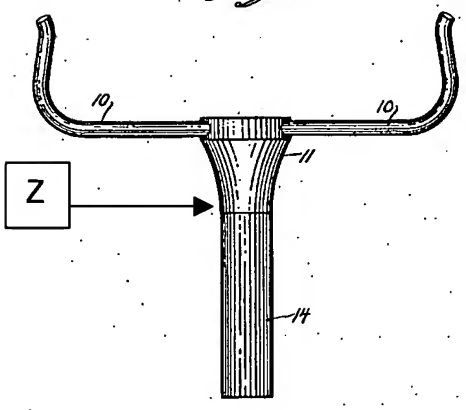


Fig. 2.

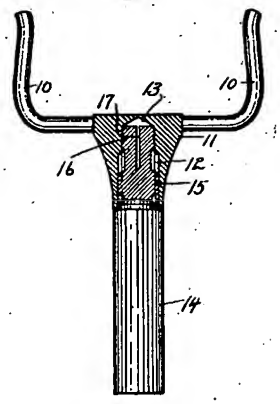


Fig. 3.

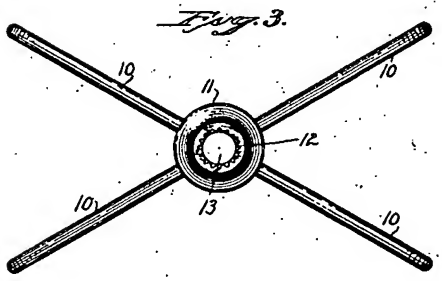


Fig. 4.

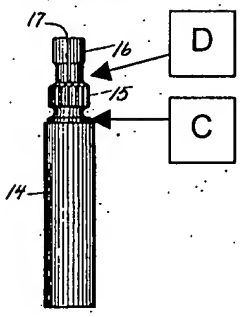
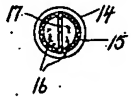


Fig. 5.



Inventor
August W. Hallberg
by Seymour Earle
Attys

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bayer et al. (US 5,716,156) and Oliver (US 3,330,177) are cited for pertaining to shaft to hub connections.

Applicant's amendment (cancellation of claims 5-12 and addition of claims 13-17, with new limitations) necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Mills whose telephone number is 571-272-8115. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on 571-272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJM
4/6/2006

James R. Brittain
Primary Examiner